VIRGINIA DEPARTMENT OF HEALTH

Protecting You and Your Environment

PPE & Respiratory Protection for VDH

EP&R Annual Conference
May 27, 2004

Personal Protection

PPE = Personal Protective Equipment
"PPP" = Personal Protective Practices

- Prevention = PPE + PPP
- Personal Protection is not just "personal":
  - it is also about preventing spread of disease to others.

Personal Protective Measures

- These are life-safety measures:
  - Following these measures can mean the difference between acquiring infection (or injury) and avoiding infection (or injury)
  - Following these measures can mean the difference between life and death
  - Following these measures may also prevent transmitting infection to others

Review of Levels of PPE

Levels of PPE

- Equipment that is worn to protect the individual from hazardous materials and contamination:
  - » Respirators
  - » Protective Clothing

- Levels of Protection are divided into categories based on the degree of protection afforded:
  - » Level A
  - » Level B
  - » Level C
  - » Level D

Level A

- Fully encapsulated, liquid and vapor protective ensemble selected when the highest level of skin, respiratory, and eye protection is required.

Level A

Level B

- Liquid splash resistant ensemble used with highest level of respiratory protection.
- Atmosphere-Supplying Respirators
  - Supplied Air (Airline) Respirators
  - SCBA

Level B

Level C

- Liquid Splash resistant ensemble, with same level of skin protection of Level B, used when the concentration and type of airborne substances are known and the criteria for using air-purifying respirators are met.
  - Air Purifying Respirators (APR)
  - Powered Air Purifying Respirators (PAPR)

Level C

Level D

- Usual work uniform
- Used for nuisance contamination only
- Offers minimal protection against chemical, biological or other agents

PPE Summary

	Description	Advantages	Disadvantages
Level A	Completely encapsulated suit and self-contained breathing apparatus (SCBA)	Highest level of protection available for both contact and inhaled threats.	Expense and training requirements restrict use to hazardous materials response teams, lack of mobility, heat and other physical stresses, limited air supply time.
Level B	Encapsulating suit or junctions/seams sealed, supplied air respirator or SCBA	High level of protection adequate for unknown environment entry, supplied air ensemble with increased mobility and dexterity	Dependence on air line or limited air supply time. Heat and physical stresses. Expense and training significant. Fit testing required.
Level C	Splash suit and air-purifying respirator	Significantly increased mobility, decreased physical stress, extended operation time with high levels of protection against certain agents. No fit testing required for hood-type.	Not adequate for some high concentration environments or less than atmospheric oxygen environments or high levels of splash contamination. Expense and training moderate.
Level D	Work clothes, including standard precautions for healthcare workers (eg: gloves, splash protection)	Increased mobility, decreased physical stresses, extended operation time.	Offers no protection against chemical or other agents. Expense and training minimal.

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PPE for Public Health

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Developing a Respiratory Protection Program

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OSHA PPE Standards

29 CFR 1910.120

- HAZWOPER = "Hazardous waste operations and emergency response"

29 CFR 1910.132

- General Requirements

29 CFR 1910.134

- Respiratory Protection

29 CFR 1910.132
General Requirements

- Employers must:
  - Perform Hazard Assessment
  - Select appropriate PPE
  - Provide training

29 CFR 1910.134 Respiratory Protection Standard

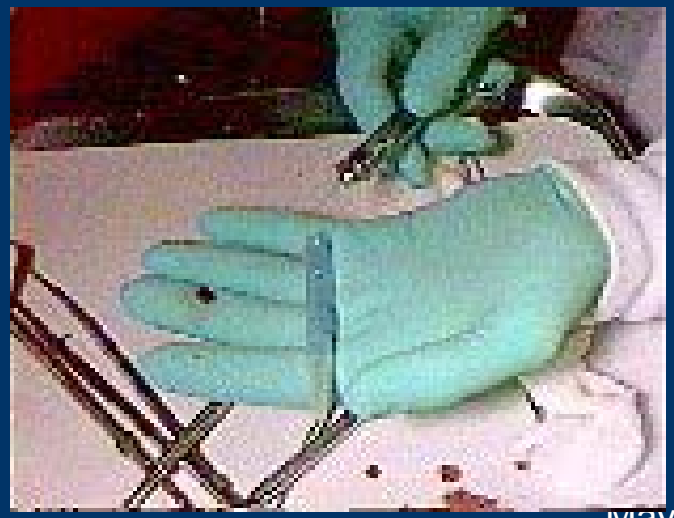
- (a) Permissible practice
- (b) Definitions
- (c) Respirator program
- (d) Selection of respirators
- (e) Medical evaluation
- (f) Fit testing
- (g) Use of respirators
- (h) Maintenance and care
- (i) Breathing air quality and use
- (j) Identification of filters, cartridges, and canisters
- (k) Training and information
- (l) Program evaluation
- (m) Recordkeeping
- (n) Dates
- (o) Appendices (mandatory)
  - A: Fit Testing Procedures
  - B-1: User Seal Checks
  - B-2: Cleaning Procedures
  - C: Medical Questionnaire
  - D: Information for Employees Wearing Respirators When Not Required Under the Standard

Respirator Program: Elements

1. Hazard Assessment
2. Selection of Respirators
3. Medical evaluation
4. Fit testing
5. Use
6. Maintenance and care
7. Training
8. Program evaluation

Hazard Assessment

Bioterrorism: Letters Containing Anthrax



Selection of Respirators

- Employer must select and provide an appropriate respirator based on the respiratory hazards to which the worker is exposed and workplace and user factors that affect respirator performance and reliability.

Respirators

1) Air-Purifying Respirators (APR)
   - Half face mask APR
   - Full face mask APR (“gas mask”)
   - Powered APR (PAPR)
   - Filtering facepiece (dust mask, e.g., N95)
2) Atmosphere-Supplying Respirators
   - Supplied Air Respirator (SAR)
   - Self-Contained Breathing Apparatus (SCBA)

Air-Purifying Respirator (APR)

A respirator with an air-purifying filter, cartridge, or canister that removes specific air contaminants by passing ambient air through the air-purifying element.

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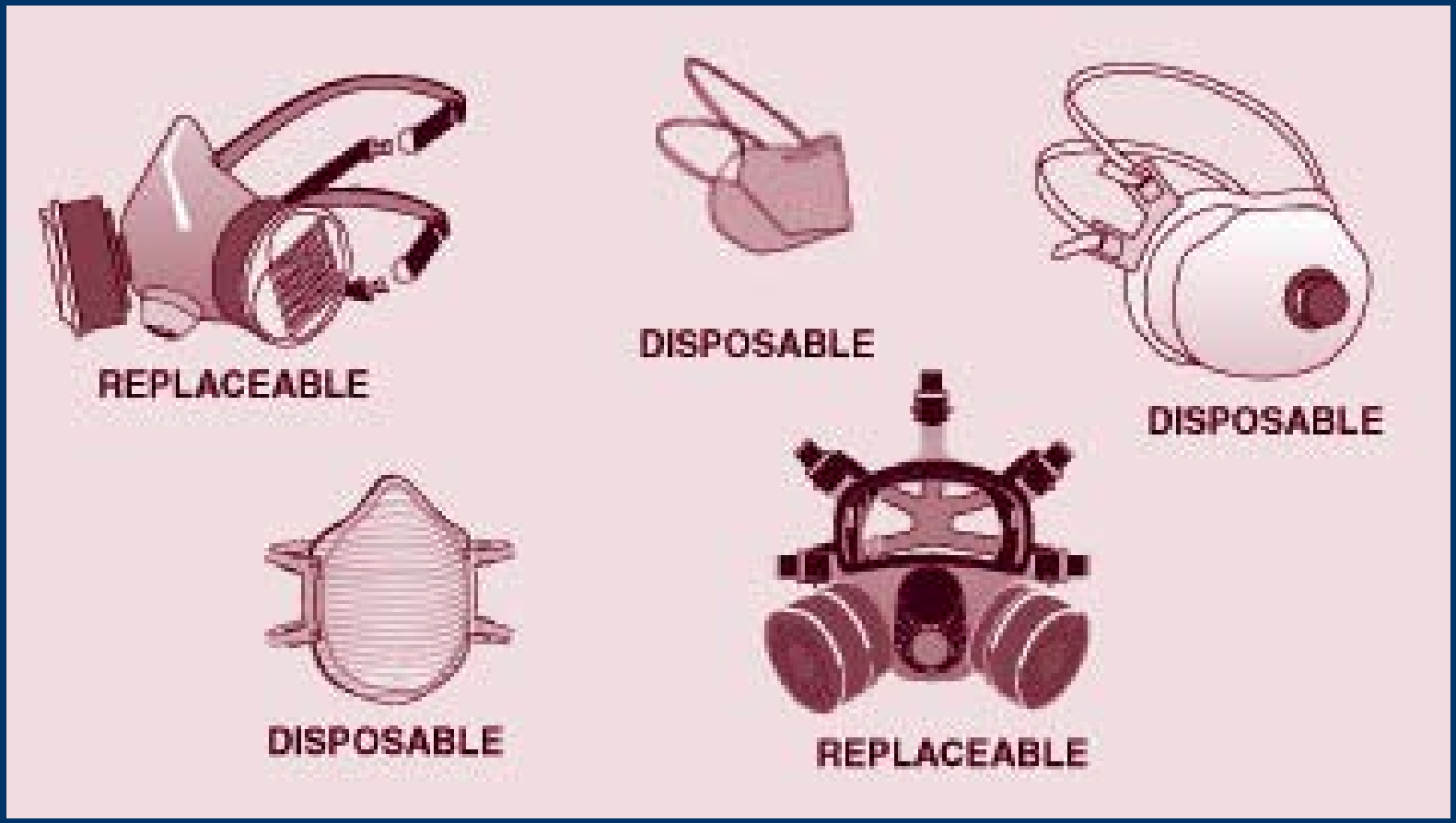
Air-Purifying Respirators (APR)



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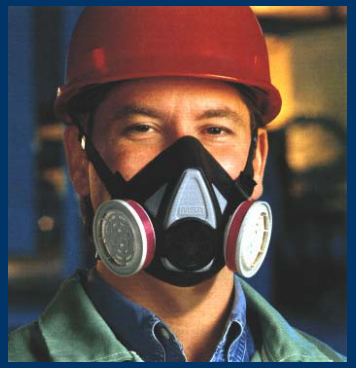
Tight-Fitting APRs

Quarter Mask



Half Mask

Full Facepiece

Air-Purifying Respirator (APR)

- Air-purifying respirators can be:
  - particulate-removing,
  - vapor- and gas-removing, or
  - combination of both

Powered Air-Purifying Respirator (PAPR)

An air-purifying respirator that uses a blower to force the ambient air through air-purifying elements to the user via hose to a half- or full-face mask or loose-fitting hood/helmet.

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Disposable Particulate Respirator = Filtering Facepiece Respirator = "Single Use Respirator" = "Dust Mask"

A negative pressure particulate respirator with a filter as an integral part of the facepiece or with the entire facepiece composed of the filtering medium.

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N95 Particulate Respirator

- Commonly used in healthcare settings as part of airborne precautions
- Protection from infectious aerosols (e.g., tuberculosis, smallpox) and particulates
- Not effective for vapors, gases, or oil-based contaminants
- Caution: can be dislodged or wetted during decontamination and treatment activities.

Selection of Respirators

Ratings and Efficiencies (e.g., N95, P100):

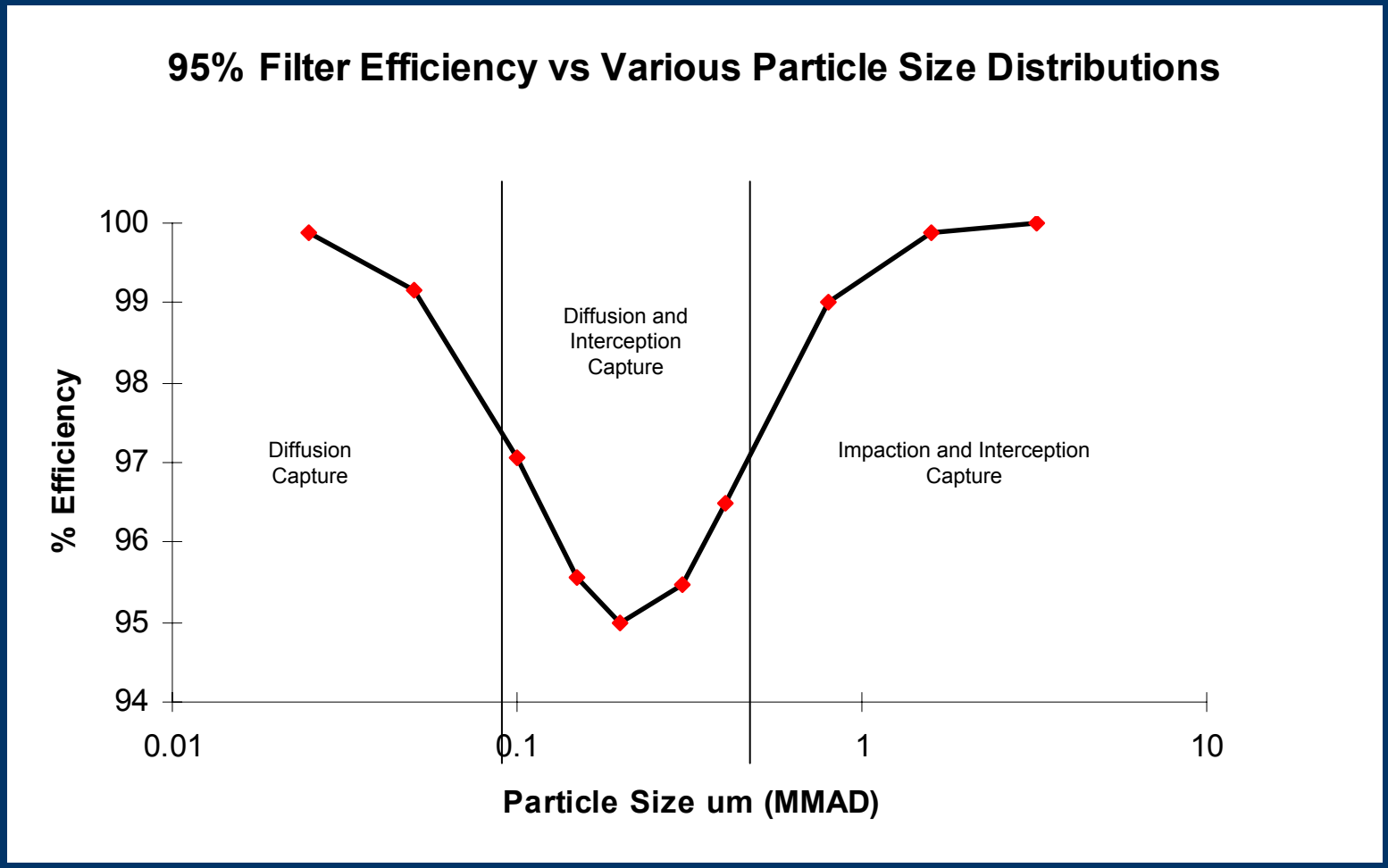
- N = not resistant to oil
- R = resistant to oil
- P = oil proof

- 95 = 95% efficient
- 99 = 99% efficient
- 100 = 99.97% efficient (= HEPA)

N95 Respirator

- All NIOSH approved N95 filtering facepiece respirators are certified to have a filtration efficiency of at least 95% against a 0.3 micron size particle.

N95 Respirator Rating



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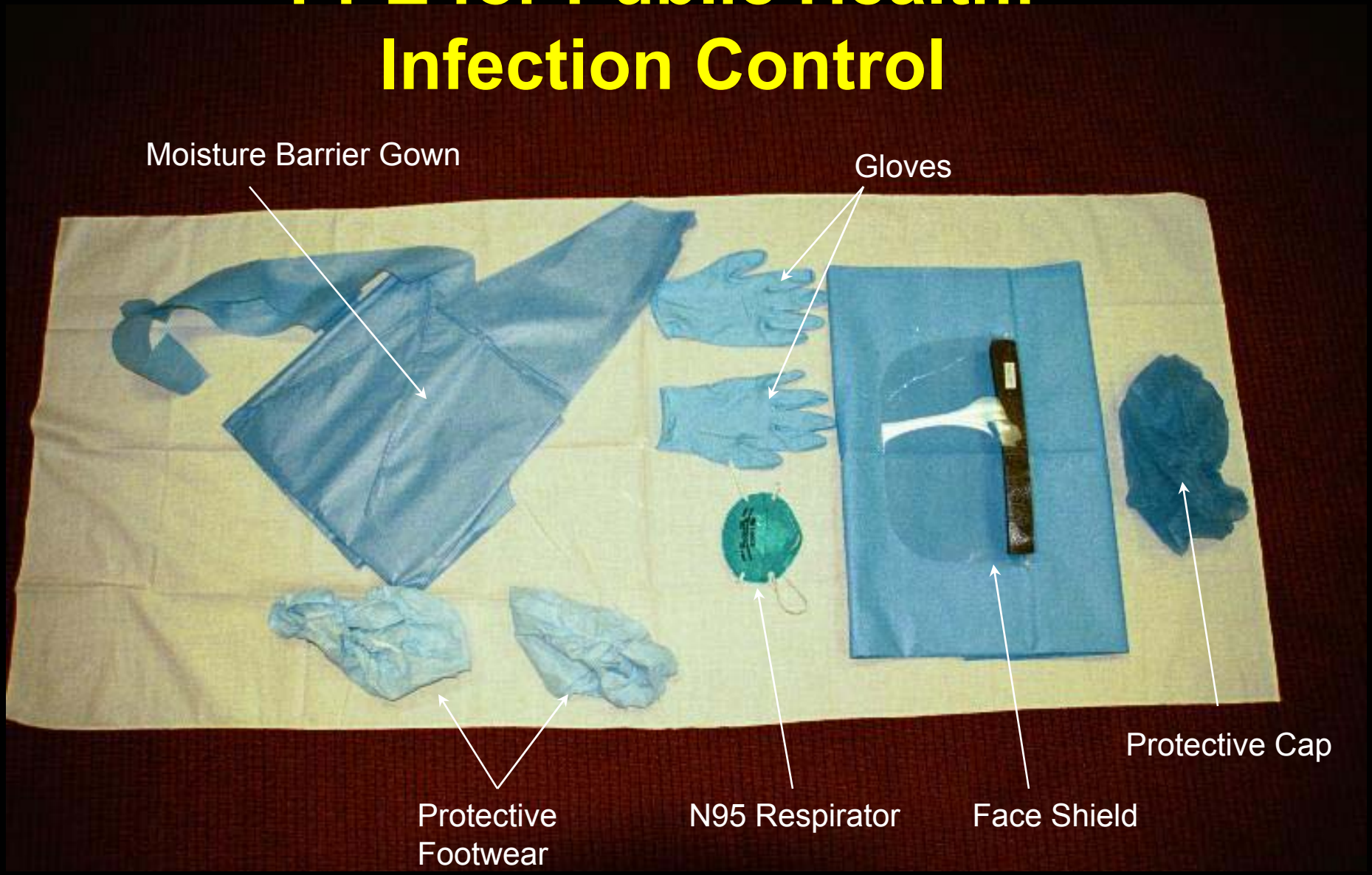
PPE for Public Health: Infection Control



Medical Evaluation

- Must provide a medical evaluation to determine employee's ability to use a respirator, before fit testing and use.
- Must identify a PLHCP to perform medical evaluations using a medical questionnaire or an initial medical examination that obtains the same information.
- Medical evaluation must obtain the information requested by the questionnaire in Sections 1 and 2, Part A of App. C.
- Annual review of medical status is not required.

Follow-Up Medical Evaluation

- Additional medical evaluation is required if:
  - Employee has positive response on questionnaire;
  - Employee reports medical signs or symptoms related to the ability to use a respirator;
  - PLHCP, supervisor, or program administrator informs the employer that an employee needs to be reevaluated;
  - Information from the respirator program, including observations made during fit testing and program evaluation, indicates a need;
  - Change occurs in workplace conditions that may substantially increase the physiological burden on an employee.

Fit-Testing

- Before an employee uses any respirator, the employee must be fit-tested with the same make, model, style, and size of respirator that will be used.

Qualitative Fit Test (QLFT)

- A pass/fail fit test to assess the adequacy of respirator fit that relies on the individual's response to the test agent.

Quantitative Fit Test (QNFT)

- An assessment of the adequacy of respirator fit by numerically measuring the amount of leakage into the respirator.

When Fit Testing is Required

- Prior to initial use,
- At least annually thereafter
- Whenever a different respirator facepiece (size, style, model or make) is used, and
- Whenever there are changes in the employee's physical condition (e.g., facial scarring, dental changes, cosmetic surgery, or obvious change in body weight) that could affect respirator fit

➢ Only for employees using tight-fitting facepiece respirators

- Hooded PAPRs do not require fit-testing.

Maintenance and Care

- Provide each user with a respirator that is clean, sanitary and in good working order
- Use procedures in Appendix B-2 or equivalent manufacturer's recommendations
- Clean and disinfect at the following intervals:
  - as often as necessary when issued for exclusive use
  - before being worn by different individuals when issued to more than one employee
  - after each use for emergency respirators and those used in fit testing and training

Training and Information

- Employers must provide effective training to employees who are required to use respirators.

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Training and Information

- Employees who are required to use respirators must be trained such that they can demonstrate knowledge of at least:
  - why the respirator is necessary and how improper fit, use, or maintenance can compromise its protective effect
  - limitations and capabilities of the respirator
  - effective use in emergency situations
  - how to inspect, put on and remove, use and check the seals
  - maintenance and storage
  - recognition of medical signs and symptoms that may limit or prevent effective use
  - general requirements of this standard

Training and Information

- Training must be provided prior to use, unless acceptable training has been provided by another employer within the past 12 months.

- Retraining is required annually, and when:
  - changes in the workplace or type of respirator render previous training obsolete
  - there are inadequacies in the employee's knowledge or use
  - any other situation arises in which retraining appears necessary

- The basic advisory information in Appendix D must be provided to employees who wear respirators when use is not required by this standard or by the employer

Program Evaluation

- Must conduct evaluations of the workplace as necessary to ensure effective implementation of the program.

- Must regularly consult employees required to use respirators to assess their views on program effectiveness and to identify and correct any problems.

- Factors to be assessed include, but are not limited to:
  - respirator fit (including effect on workplace performance)
  - appropriate selection
  - proper use
  - proper maintenance

Recordkeeping

- Records of medical evaluations must be retained and made available per 29 CFR 1910.1020.
- A record of fit tests must be established and retained until the next fit test is administered.
- A written copy of the current program must be retained.
- Written materials required to be retained must be made available upon request to affected employees and OSHA.

Respirator Protection Program: Summary

Employers Must:

- Develop a written program with worksite-specific procedures
- Designate a Program Administrator
- Provide respirators, training, and medical evaluations at no cost to the employee.

Respiratory Program Resources

OSHA Regulation 1910.134

Program Administrator Orientation

PLHCP Orientation

Respiratory Protection Written Program

Medical Questionnaire

Small Entity Compliance Guide

Respiratory Protection Training

Course Outline

Module 1:
OSHA Regulations

Module 2:
Respiratory Hazards

Module 3:
Respirator Type

Module 4:
Donning/Doffing

Module 5:
Sensitivity Test

Module 6:
Fit-Testing

Resources